PTO Form 1960 (Rev 9/2007)
OMB No. 0651-0050 (Exp. 07/31/2017)

Request for Reconsideration after Final Action

The table below presents the data as entered.

Input Field	Entered
SERIAL NUMBER	79141756
LAW OFFICE ASSIGNED	LAW OFFICE 106
MARK SECTION (no change)	
ARGUMENT(S)	
Remarks In response to the March 29, 2015 Reconsideration Letter, applicant submits an amendment to both class 1 and class 6 goods herewith. Regarding the class 1 goods, the examining attorney stated: "The nature of “organic substances for use in injection moulding” should be explained as goods in Class 001 or delete. Applicant should specify what the substances are in Class 001, as the nature is unclear.” Applicant hereby amends these goods to “organic substances, namely, polymers, waxes and release agents, for use in injection moulding.” The examining attorney objected to inclusion of “waxes” in this manner in the first Office Action, saying that waxes are not Class 001 chemicals. Applicant submits that waxes are not limited to a single class, but, rather, are classified according to their purpose. For example, in the ID Manual, waxes are found in classes 3, 4, 5, 7, 16, 20 and 28. See attached Exhibit 1. Further, waxes are organic substances. See attached Exhibit 2. Therefore, waxes are organic substances that, when used as industrial chemicals, are properly grouped in class 1. Regarding the inclusion of “release agents,” this is a known description for a certain group of chemicals. Release agents are found in the ID Manual in class 1. See Exhibit 3. For these reasons, applicant submits that its current amendment to the goods is acceptable and requests that this mark proceed to publication. Closing If the examiner has any questions, she is encouraged to contact the undersigned attorney directly at (206) 695-1660.	
EVIDENCE SECTION	
EVIDENCE FILE NAME(S)	
ORIGINAL PDF FILE	evi_6713915899-20150501175047671434_._MIMIT_Exhibit_1.pdf

CONVERTED PDF FILE(S) (5 pages)	\\TICRS\EXPORT16\IMAGEOUT16\791\417\79141756\xml14\RFR0002.JPG
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ORIGINAL PDF FILE	evi_6713915899-20150501175047671434_._MIMIT_Exhibit_2.pdf
CONVERTED PDF FILE(S) (7 pages)	\\TICRS\EXPORT16\IMAGEOUT16\791\417\79141756\xml14\RFR0007.JPG
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	\\TICRS\EXPORT16\IMAGEOUT16\791\417\79141756\xml14\RFR0012.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\417\79141756\xml14\RFR0013.JPG
ORIGINAL PDF FILE	evi_6713915899-20150501175047671434_._MIMIT_Exhibit_3.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT16\IMAGEOUT16\791\417\79141756\xml14\RFR0014.JPG
DESCRIPTION OF EVIDENCE FILE	Exhibits 1, 2 and 3
GOODS AND/OR SERVICES SECTION (001)(current)	
INTERNATIONAL CLASS	001
DESCRIPTION	
Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; organic substances for use in injection moulding; chemical additives for use in the moulding of metals	
GOODS AND/OR SERVICES SECTION (001)(proposed)	
INTERNATIONAL CLASS	001
TRACKED TEXT DESCRIPTION	
Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; ~~organic substances for use in injection~~	

~~moulding~~; organic substances, namely, polymers, waxes and release agents, for use in injection moulding; chemical additives for use in the moulding of metals

FINAL DESCRIPTION
Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; organic substances, namely, polymers, waxes and release agents, for use in injection moulding; chemical additives for use in the moulding of metals

GOODS AND/OR SERVICES SECTION (006)(current)	
INTERNATIONAL CLASS	006
DESCRIPTION	
Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; meal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing	

GOODS AND/OR SERVICES SECTION (006)(proposed)	
INTERNATIONAL CLASS	006
TRACKED TEXT DESCRIPTION	
Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; ~~meal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods~~; metal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing	
FINAL DESCRIPTION	
Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; metal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing	

SIGNATURE SECTION	
RESPONSE SIGNATURE	/Sarah E. Nagae/
SIGNATORY'S NAME	Sarah E. Nagae
SIGNATORY'S POSITION	Attorney of Record, Washington State Bar Member
SIGNATORY'S PHONE NUMBER	206-682-8100
DATE SIGNED	05/01/2015
AUTHORIZED SIGNATORY	YES

CONCURRENT APPEAL NOTICE FILED	NO
FILING INFORMATION SECTION	
SUBMIT DATE	Fri May 01 18:23:44 EDT 2015
TEAS STAMP	USPTO/RFR-67.139.158.99-2 01505011823444375 46-79141 756-530a7d0ffed3ebbeb6782 652f666a6838f22bc4ab214d2 13f5332bccba592af5-N/A-N/ A-20150501175047671434

PTO Form 1960 (Rev 9/2007)
OMB No. 0651-0050 (Exp. 07/31/2017)

Request for Reconsideration after Final Action

To the Commissioner for Trademarks:

Application serial no. **79141756** has been amended as follows:

ARGUMENT(S)

In response to the substantive refusal(s), please note the following:

Remarks

In response to the March 29, 2015 Reconsideration Letter, applicant submits an amendment to both class 1 and class 6 goods herewith.

Regarding the class 1 goods, the examining attorney stated:

"The nature of “organic substances for use in injection moulding” should be explained as goods in Class 001 or delete. Applicant should specify what the substances are in Class 001, as the nature is unclear.”

Applicant hereby amends these goods to “organic substances, namely, polymers, waxes and release agents, for use in injection moulding.” The examining attorney objected to inclusion of “waxes” in this manner in the first Office Action, saying that waxes are not Class 001 chemicals. Applicant submits that waxes are not limited to a single class, but, rather, are classified according to their purpose. For example, in the ID Manual, waxes are found in classes 3, 4, 5, 7, 16, 20 and 28. See attached Exhibit 1. Further, waxes are organic substances. See attached Exhibit 2. Therefore, waxes are organic substances that, when used as industrial chemicals, are properly grouped in class 1.

Regarding the inclusion of “release agents,” this is a known description for a certain group of chemicals. Release agents are found in the ID Manual in class 1. See Exhibit 3.

For these reasons, applicant submits that its current amendment to the goods is acceptable and requests that this mark proceed to publication.

Closing

If the examiner has any questions, she is encouraged to contact the undersigned attorney directly at (206) 695-1660.

EVIDENCE
Evidence in the nature of Exhibits 1, 2 and 3 has been attached.
Original PDF file:
evi_6713915899-20150501175047671434_._MIMIT_Exhibit_1.pdf
Converted PDF file(s) (5 pages)
Evidence-1
Evidence-2
Evidence-3
Evidence-4
Evidence-5
Original PDF file:
evi_6713915899-20150501175047671434_._MIMIT_Exhibit_2.pdf
Converted PDF file(s) (7 pages)
Evidence-1
Evidence-2
Evidence-3
Evidence-4
Evidence-5
Evidence-6
Evidence-7
Original PDF file:
evi_6713915899-20150501175047671434_._MIMIT_Exhibit_3.pdf
Converted PDF file(s) (1 page)
Evidence-1

CLASSIFICATION AND LISTING OF GOODS/SERVICES
Applicant proposes to amend the following class of goods/services in the application:
Current: Class 001 for Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; organic substances for use in injection moulding; chemical additives for use in the moulding of metals
Original Filing Basis:
Filing Basis Section 66(a) , Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Proposed:
Tracked Text Description: Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; ~~organic substances for use in injection moulding~~; organic substances, namely, polymers, waxes and release agents, for use in injection moulding; chemical additives for use in the moulding of metals

Class 001 for Chemical powders, namely chemical preparations, namely chemical powders for use in injection moulding for use as a ready-to-use moulding compound; organic substances, namely, polymers, waxes and release agents, for use in injection moulding; chemical additives for use in the moulding of metals

Filing Basis Section 66(a) , Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Applicant proposes to amend the following class of goods/services in the application:
Current: Class 006 for Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; meal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing
Original Filing Basis:
Filing Basis Section 66(a) , Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Proposed:
Tracked Text Description: Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; ~~meal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods~~; metal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing

Class 006 for Metal and metal alloyed feedstocks, namely metals and metallic alloys for moulding, namely for injection moulding processing; metal and metal alloyed feedstocks, namely metals and metallic alloys used as raw materials in the moulding of metals or in the production of metal goods; metal and metal alloyed feedstocks, namely common metal powder for injection molding processing

Filing Basis Section 66(a) , Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

SIGNATURE(S)
Request for Reconsideration Signature
Signature: /Sarah E. Nagae/ Date: 05/01/2015
Signatory's Name: Sarah E. Nagae
Signatory's Position: Attorney of Record, Washington State Bar Member

Signatory's Phone Number: 206-682-8100

The signatory has confirmed that he/she is an attorney who is a member in good standing of the bar of the highest court of a U.S. state, which includes the District of Columbia, Puerto Rico, and other federal territories and possessions; and he/she is currently the applicant's attorney or an associate thereof; and to the best of his/her knowledge, if prior to his/her appointment another U.S. attorney or a Canadian attorney/agent not currently associated with his/her company/firm previously represented the applicant in this matter: (1) the applicant has filed or is concurrently filing a signed revocation of or substitute power of attorney with the USPTO; (2) the USPTO has granted the request of the prior representative to withdraw; (3) the applicant has filed a power of attorney appointing him/her in this matter; or (4) the applicant's appointed U.S. attorney or Canadian attorney/agent has filed a power of attorney appointing

him/her as an associate attorney in this matter.

The applicant is not filing a Notice of Appeal in conjunction with this Request for Reconsideration.

Serial Number: 79141756
Internet Transmission Date: Fri May 01 18:23:44 EDT 2015
TEAS Stamp: USPTO/RFR-67.139.158.99-2015050118234443
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Trademark ID Manual

Refine Search: (WAXES)

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Documents: 1 - 99 of 99

Hit No.	Class	Description	Status	Effective Date	Type	Note	TM5
1	003	Automobile and car wax preparations	A	17 Sep 09	G	N	
2	003	Automobile wax	A	02 Apr 91	G	N	T
3	003	Boot wax	A	12 Aug 10	G	N	T
4	003	Carnauba wax for automotive use	A	02 Jan 97	G	N	T
5	003	Carnauba wax for marine use	A	18 Jul 13	G	N	
6	003	Cobblers' wax	A	02 Apr 91	G	N	T
7	003	Depilatory wax	A	10 Apr 08	G	N	T
8	003	Emulsifying preparations for {indicate specific use, e.g., stripping wax from floors}	A	02 Apr 91	G	N	
9	003	Floor wax	A	02 Apr 91	G	N	T
10	003	Floor wax remover	A	27 Jan 11	G	N	T
11	003	Floor wax removers	X	01 Oct 94	G	Y	T
12	003	Hair styling fixative in the nature of hair wax	A	12 Apr 07	G	N	
13	003	Hair wax	A	08 Nov 07	G	N	T
14	003	Laundry wax	A	24 Mar 11	G	N	T
15	003	Massage waxes	A	12 Aug 10	G	N	T
16	003	Mustache wax	A	02 Apr 91	G	N	T

17	003	Non-slipping wax for floors	A	01 Jan 07	G	N	T
18	003	Paraffin wax for cosmetic purposes	A	01 Jul 06	G	N	
19	003	Parquet floor wax	X	18 Jul 13	G	N	
20	003	Polishing wax	A	08 Nov 07	G	N	T
21	003	Shoe wax	A	24 Mar 11	G	N	T
22	003	Shoemakers' wax	A	24 Mar 11	G	N	T
23	003	Sponges impregnated with marine and automotive waxes and washes	X	27 Sep 07	G	Y	
24	003	Stripping preparations for {list specific uses, e.g., paint, stripping wax from floors}	A	02 Apr 91	G	N	
25	003	Tailors' wax	A	02 Apr 91	G	N	T
26	003	Wax for removing body hair	A	12 Apr 07	G	N	
27	003	Wax stripping preparations	A	02 Apr 91	G	N	
28	003	Wax strips for removing body hair	A	01 Jun 01	G	N	T
29	004	Bougies in the nature of wax candles	A	25 Oct 12	G	N	T
30	004	Candles being of wax or liquid, for the illumination of carved pumpkins, mini-pumpkins, gourds, and other fruits and vegetables	A	26 Jul 07	G	N	
31	004	Carnauba wax	A	02 Apr 91	G	N	T
32	004	Casting wax for use in conjunction with microjet-based rapid prototype/modelmaking equipment	A	01 Aug 04	G	N	
33	004	Fragrant wax for use in potpourri burners	A	01 Apr 05	G	N	
34	004	Gels comprised of plant-based oils and plant-based waxes for use in the manufacture of cosmetics and toiletries	A	23 Oct 08	G	N	T
35	004	Gels comprised of vegetable-based oils and vegetable-based waxes for use in the manufacture of cosmetics and toiletries	A	23 Oct 08	G	N	
36	004	Melt tarts, namely, scented wax to be melted slowly with a warmer	A	12 Feb 09	G	N	
37	004	Montan wax	A	01 Jun 04	G	N	
38	004	Oils, waxes for use in the manufacture of other products	M	10 Dec 09	G	Y	
39	004	Paraffin wax	A	20 Jul 04	G	N	T
40	004	Protective wax for fruits and vegetables	A	01 Aug 04	G	N	
41	004	Scented wax for use in candle warmers	A	08 May 08	G	N	
42	004	Sumac wax [sumach wax]	A	20 Jul 04	G	N	T
43	004	Vegetable wax	A	12 Jun 14	G	N	T
44	004	Vegetable-based waxes for use in coating food products	A	01 Jun 04	G	N	
45	004	Wax dispersions for use in the manufacture of {indicate general nature of items, e.g.,	A	28 Mar	G	Y	

		lacquers, printing inks, etc., or indicate for a wide variety of goods, if accurate}		13			
46	004	Wax emulsions and wax powders for industrial applications	A	01 Aug 04	G	N	
47	004	Wax for making candles	A	13 May 10	G	N	T
48	004	Wax for use in coating food packaging materials	A	01 Jun 01	G	N	T
49	004	Wax melts	A	12 Dec 13	G	Y	
50	004	Waxes [raw material]	A	20 Jul 04	G	N	T
51	005	Bone wax for use in surgical procedures	A	07 Feb 08	G	N	
52	005	Dental wax	M	12 Apr 99	G	N	T
53	005	Dental waxes	A	20 Jul 04	G	N	T
54	005	Modeling wax for dental purposes	A	30 Apr 09	G	N	T
55	005	Molding wax for dental use	A	11 Nov 10	G	N	
56	005	Molding wax for dentists' use	A	11 Nov 10	G	N	
57	007	Electric parquet wax-polishers	A	27 Jun 13	G	N	
58	007	Electric wax-polishing machines for household purposes	A	20 Jul 04	G	N	T
59	007	Electric wax-polishing machines for industrial purposes	A	20 Jul 04	G	N	T
60	007	Parquet wax-polishers, electric	X	27 Jun 13	G	Y	
61	008	Beveled hand tool in the nature of a squeegee for spreading and leveling paint and wax products on cars, motorcycles, planes and boat panels	X	21 Feb 13	G	Y	
62	008	Hand tools, namely, surfboard wax removal tool	A	14 May 09	G	N	
63	008	Hand-operated ski corks for smoothing wax onto skis	A	14 Aug 14	G	Y	
64	008	Scoops for restoration of candle wicks and for removing wax	A	01 Dec 04	G	N	
65	008	Spatulas for spreading hot wax	A	01 Jan 05	G	N	
66	010	Medical apparatus, namely, an ear wash device in the nature of a container to be filled with appropriate fluid by the user for flushing ear wax from the ear	A	09 Aug 07	G	N	
67	011	Electric warmers to melt scented wax tarts	X	17 Apr 14	G	N	
68	016	Modeling wax, not for dental purposes	A	01 Apr 10	G	N	T
69	016	Sealing wax	A	02 Apr 91	G	N	T
70	016	Wax bond paper	A	01 Jun 01	G	N	
71	016	Wax paper	A	02 Apr 91	G	N	
72	020	Busts of {indicate bone, ivory, plaster, plastic, wax, wood}	A	02 Apr 91	G	N	
73	020	Busts of wood, wax, plaster or plastic	A	15 Nov 07	G	N	T

74	020	Decorative centerpieces of {specify bone, ivory, plaster, plastic, wax, wood}	A	23 Jun 11	G	N	
75	020	Desktop statuary made of {indicate bone, ivory, plaster, plastic, wax, wood}	A	01 Jul 01	G	N	
76	020	Figures of {indicate bone, ivory, plaster, plastic, wax, wood}	A	02 Apr 91	G	N	
77	020	Figurines of {indicate bone, ivory, plaster, plastic, wax, wood}	A	02 Apr 91	G	N	
78	020	Jewelry wax molds	A	01 Mar 05	G	N	
79	020	Ornaments of {specify bone, ivory, plaster, plastic, wax, wood} [NOT including Christmas tree ornaments]	A	02 Apr 91	G	N	
80	020	Plaques of {indicate bone, ivory, plastic, wax, wood}	M	01 Jan 07	G	Y	
81	020	Plaques of {indicate bone, plastic, wax, wood} for use as awards	X	25 Sep 14	G	Y	
82	020	Sculptures of {indicate Class 20 material, e.g., bone, ivory, plaster, plastic, wax, wood, etc.}	A	02 Apr 91	G	N	
83	020	Statues of {indicate bone, ivory, plaster, plastic, wax, wood}	A	02 Apr 91	G	N	
84	020	Statuettes of {indicate bone, ivory, plaster, plastic, wax, wood}	A	02 Apr 91	G	N	
85	020	Wall plaques made of {indicate bone, ivory, plaster, plastic, wax, wood}	A	12 Nov 09	G	Y	
86	020	Wax figurines	A	29 Nov 12	G	N	T
87	020	Works of art made of wax	A	21 May 09	G	N	T
88	020	Works of art of {indicate wood, wax, plaster or plastic}	A	08 Mar 07	G	N	
89	020	Works of art of wood, wax, plaster or plastic	A	15 Nov 07	G	N	T
90	021	Floor wax applicator mountable on a mop handle	A	01 Jun 01	G	N	
91	021	Funnels, namely, sprues of wax for jewelry casting	A	16 Sep 10	G	N	
92	021	Non-electric warmers for use with tea candles to melt scented wax tarts	A	05 Mar 15	G	Y	
93	024	Lightweight cotton cloth in the nature of a wash cloth designed to clean the external ear and the visible ear canal by removing crusted ear wax, dirt, dried skin, and soap residue	A	29 May 08	G	N	
94	028	Skateboard wax	A	25 Nov 10	G	N	T
95	028	Ski wax	A	02 Apr 91	G	N	
96	028	Snowboard wax	A	17 Jul 08	G	N	
97	028	Surfboard wax	A	02 Apr 91	G	N	
98	028	Wax for skis	A	22 Nov 07	G	N	T
99	028	Wax for sports equipment, namely, {indicate type of sports equipment, e.g., ice hockey sticks, skateboards, skis, etc.}	A	17 Nov 11	G	N	

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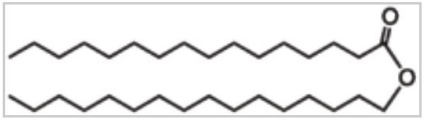
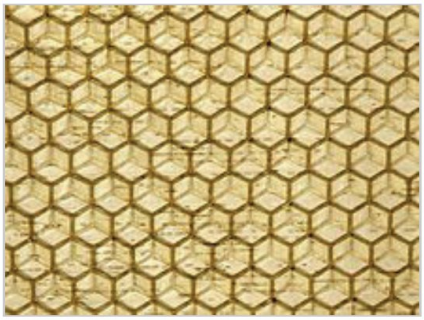
Wax

From Wikipedia, the free encyclopedia

Waxes are a class of chemical compounds that are plastic (malleable) near ambient temperatures. They are also a type of lipid. Characteristically, they melt above 45 °C (113 °F) to give a low viscosity liquid. Waxes are insoluble in water but soluble in organic, nonpolar solvents. All waxes are organic compounds, both synthetic and naturally occurring.



Cetyl palmitate, a typical wax ester.



Commercial honeycomb foundation, made by pressing beeswax between patterned metal rollers.

Contents

Types

Waxes are organic compounds that characteristically consist of long alkyl chains. Natural waxes may contain esters of carboxylic acids and long chain alcohols or mixtures of substituted hydrocarbons, such as long chain fatty acids and primary alcohols. Synthetic waxes are long-chain hydrocarbons lacking functional groups.

Plant and animal waxes

Waxes are synthesized by many plants and animals. Those of animal origin typically consist of wax esters derived from a variety of carboxylic acids and fatty alcohols. In waxes of plant origin characteristic mixtures of unesterified hydrocarbons may predominate over esters.[1] The composition depends not only on species, but also on geographic location of the organism. Because they are mixtures, naturally produced waxes are softer and melt at lower temperatures than the pure components.

Animal waxes

The most commonly known animal wax is beeswax, but other insects secrete waxes. A major component of the beeswax used in constructing honeycombs is the ester myricyl palmitate which is an ester of triacontanol and palmitic acid. Its melting point is 62-65 °C. Spermaceti occurs in large amounts in the head oil of the sperm whale. One of its main constituents is cetyl palmitate, another ester of a fatty acid and a fatty alcohol. Lanolin is a wax obtained from wool, consisting of esters of sterols.[2]

Ceroline brand wax for floors and furniture, first half of 20th century. From the Museo del Objeto del Objeto collection

Plant waxes

Plants secrete waxes into and on the surface of their cuticles as a way to control evaporation, wettability and hydration.[3] The epicuticular waxes of plants are mixtures of substituted long-chain aliphatic hydrocarbons, containing alkanes, alkyl esters, fatty acids, primary and secondary alcohols, diols, ketones, aldehydes.[1] From the commercial perspective, the most important plant wax is Carnauba wax, a hard wax obtained from the Brazilian palm *Copernicia prunifera*. Containing the ester myricyl cerotate, it has many applications, such as confectionery and other food coatings, car and furniture polish, floss coating, surfboard wax, and other uses. Other more specialized vegetable waxes include candelilla wax and ouricury wax.

Petroleum derived waxes

Although many natural waxes contain esters, paraffin waxes are hydrocarbons, mixtures of alkanes usually in a homologous series of chain lengths. These materials represent a significant fraction of petroleum. They are refined by vacuum distillation. Paraffin waxes are mixtures of saturated n- and iso- alkanes, naphthenes, and alkyl- and naphthene-substituted aromatic compounds. The degree of branching has an important influence on the properties. Millions of tons of paraffin waxes are produced annually. They are used in foods (such as chewing gum and cheese wrapping), in candles and cosmetics, as non-stick and waterproofing coatings and in polishes.

Montan wax

Montan wax is a fossilized wax extracted from coal and lignite. It is very hard, reflecting the high concentration of saturated fatty acids and alcohols. Although dark brown and smelly, they can be purified and bleached to give commercially useful products.

Polyethylene and related derivatives

Some waxes are obtained by cracking polyethylene at 400 °C. The products have the formula $(CH_2)_nH_2$, where n ranges between about 50 and 100. As of 1995, about 200 million kilograms/y were consumed.[3]

Uses

Wax candle.

Waxes are mainly consumed industrially as components of complex formulations, often for coatings.[3] The main use of polyethylene and polypropylene waxes is in the formulation of colourants for plastics. Waxes confer matting effects and wear resistance to paints. Polyethylene waxes are incorporated into inks in the form of dispersions to decrease friction. They are employed as release agents. They are also used as slip agents, e.g. in furniture, and corrosion resistance.

Candles

Waxes and hard fats such as tallow are used to make candles, used for lighting and decoration.

A typical modern wax sculpture of Cecilia Cheung at Madame Tussauds Hong Kong.

Wood products

Waxes are used as finishes and coatings for wood products.[4] Beeswax is frequently used as a lubricant on drawer slides where wood to wood contact occurs.

Other uses

Sealing wax was used to close important documents in the Middle Ages. Wax tablets were used as writing surfaces. There were different types of wax in the Middle Ages, namely four kinds of wax (Ragusan, Montenegro, Byzantine, and Bulgarian), "ordinary" waxes from Spain, Poland, and Riga, unrefined waxes and colored waxes (red, white, and green).[5][6] Waxes are used to make wax paper, impregnating and coating paper and card to waterproof it or make it resistant to staining, or to modify its surface properties. Waxes are also used in shoe polishes, wood polishes, and automotive polishes, as mold release agents in mold making, as a coating for many cheeses, and to waterproof leather and fabric. Wax has been used since antiquity as a temporary, removable model in lost-wax casting of gold, silver and other materials.

Wax with colorful pigments added has been used as a medium in encaustic painting, and is used today in the manufacture of crayons and colored pencils. Carbon paper, used for making duplicate typewritten documents was coated with carbon black suspended in wax, typically montan wax, but has largely been superseded by photocopiers and computer printers. In another context, lipstick and mascara are blends of various fats and waxes colored with pigments, and both beeswax and lanolin are used in other cosmetics. Ski wax is used in skiing and snowboarding. Also, the sports of surfing and skateboarding often use wax to enhance the performance.

Some waxes are considered food-safe and are used to coat wooden cutting boards and other items that come into contact with food. Beeswax or coloured synthetic wax is used to decorate Easter eggs in the Ukraine, Poland, and the Czech Republic. Paraffin wax is used in making chocolate covered bon-bons. Wax is also used in wax bullets, which are used as simulation aids.

Wax-decorated Easter eggs as made in the Ukraine and the Czech Republic.

Specific examples

Animal waxes

- Beeswax - produced by honey bees
- Chinese wax - produced by the scale insect *Ceroplastes ceriferus*
- Lanolin (wool wax) - from the sebaceous glands of sheep
- Shellac wax - from the lac insect *Kerria lacca*
- Spermaceti - from the head cavities and blubber of the sperm whale

Vegetable waxes

- Bayberry wax - from the surface wax of the fruits of the bayberry shrub, *Myrica faya*
- Candelilla wax - from the Mexican shrubs *Euphorbia cerifera* and *Euphorbia antisyphilitica*
- Carnauba wax - from the leaves of the Carnauba palm, *Copernica cerifera*
- Castor wax - catalytically hydrogenated castor oil
- Esparto wax - a byproduct of making paper from esparto grass, (*Macrochloa tenacissima*)
- Japan wax - a vegetable triglyceride (not a true wax), from the berries of *Rhus* and *Toxicodendron* species
- Jojoba oil - a replacement for spermaceti, jojoba is pressed from the seeds of the jojoba bush, *Simmondsia chinensis*
- Ouricury wax - from the Brazilian feather palm, *Syagrus coronata*.
- Rice bran wax - obtained from rice bran (*Oryza sativa*)
- Soy wax - from soybean oil
- Tallow Tree wax - from the seeds of the tallow tree *Triadica sebifera*.

Mineral waxes

- Ceresin waxes
- Montan wax - extracted from lignite and brown coal
- Ozocerite - found in lignite beds

- Peat waxes

Petroleum waxes

- Paraffin wax - made of long-chain alkane hydrocarbons
- Microcrystalline wax - with very fine crystalline structure
- Petroleum jelly

Synthetic waxes

- Polyethylene waxes - based on polyethylene
- Fischer-Tropsch waxes
- Chemically modified waxes - usually esterified or saponified
- substituted amide waxes
- polymerized α-olefins

See also

- Slip melting point

References

A lava lamp is a novelty item that contains wax melted from below by a bulb. The wax rises and falls in decorative, molten blobs.

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External links

- Waxes (http://www.cyberlipid.org/wax/wax0001.htm)
- www.microcrystallinewax.net, resource for microcrystalline wax research (http://www.microcrystallinewax.net)

Wikimedia Commons has media related to ***Wax***.

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